

II. WATER – Resource Quality Criteria

A. Quality

1. Excess Amounts

- a. Seeps – Subsurface water flows onto the surface and reduces yield or restricts the use of the land.

Criteria are met when planned measures manage excess subsurface water so that it no longer restricts use of the land. In cases where the decisionmaker cannot solve the problem alone, the CTU criteria will be met when the planned actions of the decisionmaker are not adversely contributing to the seepage. Criteria will conform and be consistent with policy and laws regarding wetlands.

- b. Ponding/flooding – Water accumulates on the surface and restricts the use of the land.

Criteria are met when planned measures safely and adequately remove excess surface water so that use of the land is no longer restricted. Criteria will conform and be consistent with policy and laws regarding wetlands and floodplains.

- c. Excess subsurface water – Subsurface water accumulates in the soil profile, which adversely affects plant growth and production operations and restricts the use of the land.

Criteria are met when planned measures reduce excess subsurface water to a level that no longer restricts use of the land. Criteria will conform and be consistent with policy and laws regarding wetlands.

2. Inadequate Outlets – Water conveyance channels and structures to collect and remove water from the land are inadequate.

Criteria are met when planned measures provide for all water system discharges to be safely disposed of through appropriate, adequate outlets. Water disposal system discharges are not to be changed from natural drainageways unless required land and water rights have been obtained.

3. Water Management for Irrigated Land – Inefficient and/or untimely utilization of existing water supplies.

Criteria are met when planned measures result in achieving a 65 percent level of irrigation efficiency.

4. Water Management for Nonirrigated Land – Managing too little or too much rainfall to maximize production.

Criteria are met when planned measures practically, effectively, and efficiently provide for managing natural moisture for the intended land use. On cropland, criteria should include measures to manage water from rainfall, and manage vegetation to the extent adequate residues can be produced and be managed. For noncropland, criteria will include those measures to manage water and vegetation to the extent the plants maximize water use efficiently. Criteria may require planning rotations that include crops adapted to expected seasonal moisture occurrences and availability and will also provide guidance on planning moisture-conserving measures.

5. Restricted flow capacity from Sediment Deposition in Water Conveyance Systems.

- a. Onsite – On-farm water quantity that affects on-farm drainage ditches, road ditches, culverts, and canals.

Criteria are met when measures are planned so that the treated area no longer contributes to the identified deposition problem. These measures generally involve controlling erosion that has higher rates of sediment yields (such as ephemeral or classic gullies) to prevent harmful sediment deposits.

- b. Offsite – Water quality that affects drainage ditches, road ditches, culverts, and canals.

Criteria are met when measures are planned so that the treated area no longer adversely contributes to the identified deposition problem. These measures generally involve controlling erosion that has higher rates of sediment yields (such as ephemeral or classic gullies) to prevent harmful sediment deposits. Criteria for nonagricultural land requires measures and treatments that retain sediment onsite. Criteria are the same as those for onsite restricted capacity.

6. Restricted Capacity from Sediment in Water Bodies, Streams, and Lakes - Water quantity that is affected because of the loss of storage capacity, as well as the loss of conveyance capacity.

Criteria are met when measures are planned so that the treated area no longer adversely contributes to the identified deposition problem. The measures generally involve controlling erosion that has higher rates of sediment yields (such as ephemeral or classic gullies) to prevent harmful sediment deposits and to reduce sediment storage impacts.

B. Quality

1. Groundwater Contaminants

- a. Pesticides – Groundwater pollution problems that occur as a result of the inappropriate use of chemicals.

Criteria are met when measures are planned so that the treated area no longer adversely contributes to groundwater contamination from pesticides. Criteria will include the use of **PEST MANAGEMENT**.

- b. Nutrients and Organics – Groundwater pollution problems that result from the use of natural or human-induced common nutrients of N, P, K, Ca, Na, Mg, and from animal and other waste.

Criteria are met when measures are planned so that the treated areas no longer adversely contribute to groundwater contamination from nutrients and organics. Criteria will include the use of **NUTRIENT MANAGEMENT** as an essential practice and when organic wastes are applied as nutrient source, **WASTE UTILIZATION** becomes an essential practice. **IRRIGATION WATER MANAGEMENT** is an essential practice if irrigation is involved.

- c. Salinity – Water pollution problems from excessive amounts of common salts, such as sodium, calcium, potassium, boron, and selenium.

Criteria are met when measures are planned to reduce contamination from tide water.

- d. Heavy Metals – Water pollution problems from human-induced common metals or metal compounds, such as iron, lead, zinc, copper, and cobalt.

Criteria are met when measures are planned so that the treated area no longer contributes to groundwater contamination from heavy metals.

WASTE UTILIZATION is an essential practice and **NUTRIENT MANAGEMENT** should help in reducing the problem.

- e. Pathogens – Known pathogen pollution of water by bacteria, viruses, protozoans, helminthes, and fungi. Pathogens can be transported in both and particulate forms.

Criteria are met when measures are planned so that the treated area no longer contributes to groundwater contaminants from pathogens. They will identify the type of organisms, such as fecal streptococcus, being used to reflect change; the field conditions of the soil organic matter and texture; and the moisture content, soil temperature, and other physical and chemical factors that influence transport and decomposition of micro-organisms.

If the source of pathogens is from organic waste, **WASTE MANAGEMENT SYSTEM** will become an essential practice to provide for reduction or death of pathogens in handling or storage of waste. If the pathogens are from waste applications, **WASTE UTILIZATION** will become essential. **WASTE UTILIZATION** is to provide for application at times when soil and climatic conditions are likely to cause organisms to die and waste will not be applied to areas subject to direct entry to groundwater. Planning needs to consider that pathogens can be transported in both soluble and particulate forms.

Criteria will be component levels when stated in Federal, State, or local laws, or nondegradation of existing problem levels.

2. Surface Water Contaminants (Stream and Lakes)

- a. Pesticides – Surface water pollution problems that result from the use of chemicals.

Criteria are met when measures are planned so that the treated area no longer contributes to surface water contamination from pesticides. Criteria will include **PEST MANAGEMENT** as an essential practice and other practices specifying pesticide use or, where appropriate, **IRRIGATION WATER MANAGEMENT**, may become essential practices. In addition, consider practices used to reduce runoff.

- b. Nutrients and Organics – Surface water pollution problems that result from the use of applied plant nutrients with emphasis on phosphorus and total nitrogen including animal and other wastes.

Criteria are met when measures are planned so that the treated area no longer contributes to surface water contamination from nutrients and organics. Criteria will include use of the **NUTRIENT MANAGEMENT** and erosion control practices which become essential practices. When organic wastes are applied as a nutrient source, **WASTE MANAGEMENT** becomes an essential practice.

- c. Suspended sediment and turbidity – Water pollution from suspended sediment and turbidity. Suspended sediment is sediment held in surrounding fluid. Turbidity is reduced clarity of fluids caused by the presence of suspended matter.

Criteria are met when measures are planned so that the treated area no longer contributes to the identified suspended sediment and turbidity problem that has limited the intended use of the water. The

measures generally involve controlling erosion that has higher rates of sediment yields (such as ephemeral or classic gullies) to prevent material entering receiving waters.

Criteria will be component levels when stated in Federal, State, or local laws, or nondegradation of existing problems levels.

- d. Low dissolved oxygen – Dissolved oxygen and biological oxygen demand found in open water or in sediment poor water.

Criteria are met when measures are planned so that the treated area no longer contributes to problems from sediment and organic carbon. They will consider sediment in aquatic habitat, especially in spawning areas. Some practices will result in a decrease in total organic carbon in offsite sediment and a corresponding improvement in the level of dissolved oxygen. Measures should be planned to control runoff, decrease sediment yields, and decrease offsite sedimentation. If organics are a contributor to low dissolved oxygen, then the criteria will include **WASTE MANAGEMENT SYSTEM**, which becomes an essential practice. If nutrients are a contributor to low dissolved oxygen, then the criteria will include **NUTRIENT MANAGEMENT**, which will also become an essential practice. Measures will result in improving dissolved oxygen to an acceptable level for the intended use if possible. If organic wastes are a contributor to low dissolved oxygen, then **WASTE UTILIZATION** becomes an essential practice.

- e. Salinity – Water pollution from common salts, such as sodium, calcium, boron, and selenium.

Criteria are met when measures are planned so that treated area no longer contributes to surface water contamination from salinity. Criteria will be met when those measures are included that reduce contamination from salinity. If salinity surface water contamination results from irrigation, then **IRRIGATION WATER MANAGEMENT** becomes an essential practice. If the source of salts is from fertilizer or other applied chemicals, the criteria will include those measures that treat the area so that it no longer adversely contributes to surface water contamination from salinity. Criteria will include use of **NUTRIENT MANAGEMENT** practice, which becomes an essential practice and **UTILIZATION** becomes an essential practice.

- f. Heavy Metals – Water pollution from human-induced common metals or metal compounds, such as iron, lead, zinc, copper, and cobalt.

Criteria are met when measures are planned so that the treated area no longer contributes to surface water contamination from heavy metals. Criteria should include those measures necessary to reduce runoff.

- g. Temperature – Undesirable water temperature

Criteria are met when measures are planned so that the treated area no longer contributes to problems associated with water temperature. This occurs primarily with those practices that cause a change in vegetative canopy or low flow augmentation along streams.

- h. Pathogens – Water pollution from bacteria, viruses, protozoans, helminthes, and fungi. Pathogens can be transported in fluid and participate forms.

Criteria are met when measures are planned so that the treated area no longer contributes to surface water contamination from pathogens. The criteria may identify the type of organisms, such as fecal streptococcus, being used to reflect change, the field conditions of the soil organic matter and texture; and the moisture content, soil temperature, and other physical and chemical factors that influence

transport and decomposition of micro-organisms. If the source of pathogens is from organic waste, WASTE MANAGEMENT SYSTEM will become an essential practice to provide for reduction or death of pathogens in handling or storage of waste. If the pathogens are from waste application, WASTE UTILIZATION will become essential. WASTE UTILIZATION should provide for application at times when soil and climatic conditions will cause organisms to die, and waste should not be applied to areas subject to direct entry to surface water. Because pathogens can be transported in both soluble and particulate forms, criteria should consider proper waste disposal system(s) for practices used to reduce runoff. Criteria will be component levels when stated in Federal, State, or local laws or nondegradation of existing problem levels.

3. Aquatic Habitat Suitability – Water pollution of open water, benthic, or streambed embryo habitat.

Criteria are met when measures are planned that increase suitability of habitat for aquatic species, and result in a less polluted habitat. Planning will include erosion control practices that substantially reduce sediment yield, nutrient enrichment, and associated sediment deposition practices. In primary nursery areas, WATER TABLE CONTROL is an essential practice to manage fresh water runoff. Consideration should also be given to determine if any endangered and threatened aquatic species exist in receiving waters. Criteria will be met when those measures are planned that provide for a positive trend toward improving aquatic habitat suitability for the species of concern. Criteria will be component levels when stated in Federal, State, and local laws or nondegradation of existing problem levels.